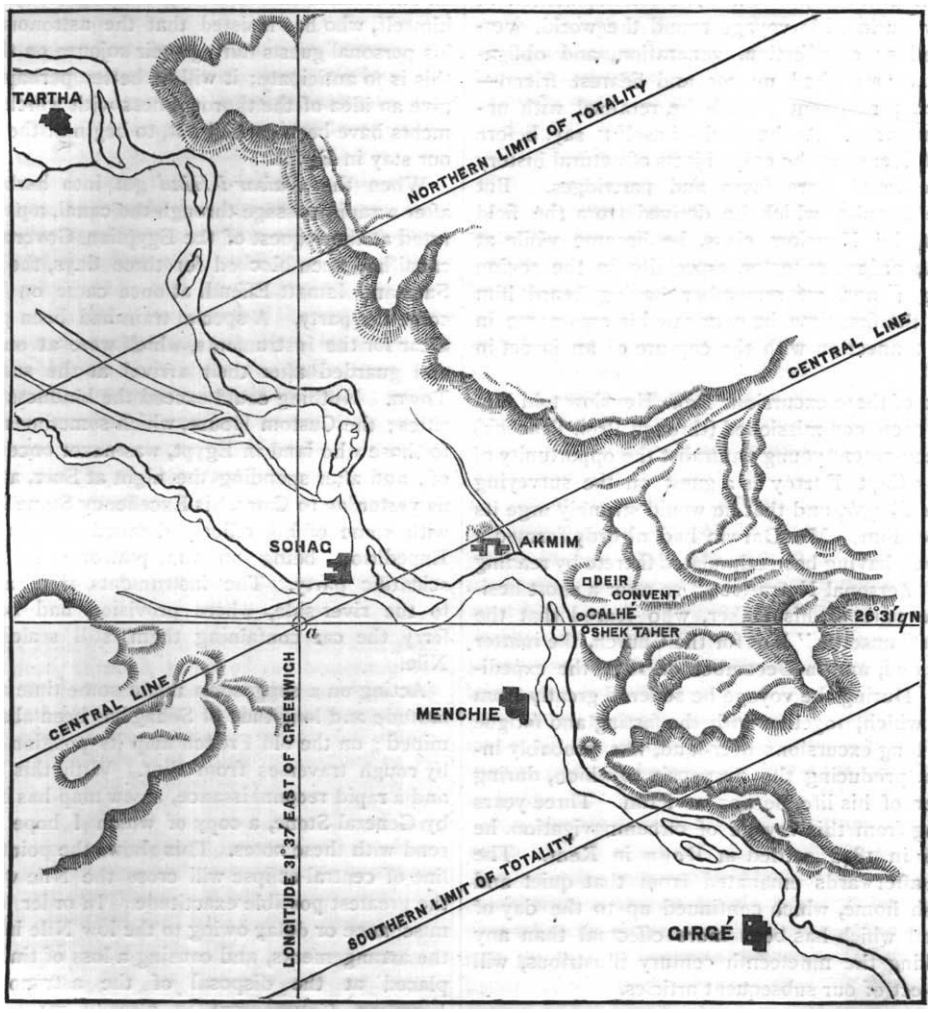
well appreciated by men of science. He has brought out a small equatorial telescope with spectroscope attached, and it is believed, intends to devote himself exclusively to spectroscopic work during the eclipse. He joins the eclipse boat a few days later on.

The French party consists of MM. Thollon, Trépied



Director of the Observatory at Algiers, and M. Buisseux; as above mentioned, they are already at their station; their work will be chiefly spectroscopic.

The Egyptian Government has deputed Moukhtar Bey, Colonel on the Staff, to assist the English party at the place of observation.

J. NORMAN LOCKYER

Cairo, May 5

(*To be continued.*)

THE TOTAL ECLIPSE

THE following telegram in the *Times* of to-day from its Special Correspondent with the English expedition to Egypt, gives the following results of the observations of the total solar eclipse of yesterday :—

Sohag, May 17

The total eclipse of the sun was successfully observed here to-day by the English, French, and Italian astronomers.

A fine comet was discovered close to the sun, its position being determined by photographs.

The spectroscopic and eye-observations just before and during the period of totality gave most valuable results, the darkening of the lines observed by the French astronomers indicating a lunar atmosphere.

A series of good photographs of the corona was obtained, and the spectrum of the corona for the first time was successfully photographed.

The astronomers will probably leave on Saturday on board the Government steamer.

THE THEORY OF DESCENT

Studies in the Theory of Descent. By Dr. Aug. Weismann. Translated and Edited by Raphael Meldola, F.C.S. Part III. The Transformation of the Mexican Axolotl into Amblystoma; On the Mechanical Conception of Nature. (London: Sampson Low, Marston, Searle, and Rivington, 1882.)

THE present issue completes the excellent translation of Dr. Weismann's valuable and suggestive work. The first two essays of which it consists is devoted to a

careful discussion of the real meaning of the transformation of the Axolotl into Amblystoma. Experiments are detailed showing that the metamorphosis may be induced with much constancy by obliging the Axolotls, at a proper stage of growth, to leave the water, when they lose their gills and undergo a number of other changes constituting a veritable metamorphosis. Dr. Weismann states that many zoologists have expressed an opinion (which was formerly held by himself) that this change is to be considered to be a true advance in development from a species which had hitherto remained in the larval stage, but which, through the influence of certain changed conditions, now advances, *per saltum*, to a higher stage. This view he gives many excellent reasons for considering to be quite erroneous; holding that the facts are best interpreted by supposing that the animal formerly underwent metamorphosis, but that owing to changed conditions it was unable to survive in the perfect state, and therefore remained in the larval condition in which it acquired the power of reproduction.

The causes which led to this change are believed to be a progressive drying up of the Mexican lakes (as long since proved by Humboldt), and a consequent increased aridity of the atmosphere inimical to land amphibia. The axolotl, therefore, presents us with a case of degeneration; and its metamorphosis under changed conditions in confinement is not due to any advance in organisation, but is really a reversion to a not very remote ancestral habit. The whole of the facts at present ascertained with regard to these animals and allied forms in their native habitats, are shown to agree well with this view, which is quite in harmony with the author's explanation of seasonal dimorphism in butterflies, given in Part I. of the same work (see NATURE, vol. xxii. p. 141), and is also more in accordance with the true principles of evolution than the alternative hypothesis.

The second, and concluding essay, is entitled "On the Mechanical Conception of Nature," and is chiefly occupied with an inquiry into the true character of variation as the chief factor in evolution, and into the comparative importance of external conditions, and the constitution of the organism in determining the particular direction of the course of development; the object being to show that all takes place according to fixed laws without the interference of any "teleological principle," whether in the form of a "phyletic vital force" or the interposition of any "designing power." The writers whose views on these subjects are combated are Von Hartmann and Karl Ernst von Baer, and, after an elaborate and often subtle argument, Dr. Weismann concludes that the facts can all be explained on "mechanical" principles, or, as we should say, by the action of fixed laws. He is however careful to add that this does not imply a materialistic view of nature. "Those who defend mechanical development will not be compelled to deny a teleological power, only they would have, with Kant, to think of the latter in the only way in which it can be conceived, viz. *as a Final Cause*." And on the great question of the nature and origin of consciousness he thus expresses himself:—"If it is asked, however, how that which in ourselves and in the remainder of the animal world is *intellectual* and *perceptive*, which *thinks* and *wills*, is ascribable to a mechanical process of development—whether the development of the mind can be conceived as resulting from purely mechanical laws? I answer unhesitatingly in the affirmative with the pure materialist, although I do not agree with him as to the manner in which he derives these phenomena from matter, since thinking and extension are heterogeneous things, and one cannot be considered as a product of the other." And he intimates that the fundamental notion of conscious matter may get us out of the difficulty. However this may be, he maintains that the theory of selection by no means leads—as is always assumed—to the denial of a teleological Universal Cause, and to materialism, but only to the belief that any mode of interference by a directive teleological power, other than by the appointment of the forces producing the phenomena, is, to the naturalist, inadmissible. "The final and main result of this essay will thus be found in the attempted demonstration that the mechanical conception of Nature very well admits of being united with a teleological conception of the Universe."

The work, of which the translation has now been completed by Mr. Meldola, must be considered a very important contribution to the theory of Natural Selection, since it applies that theory to explain in the minutest detail how the more prominent characters of several distinct groups of animals, not obviously useful to them, may have been developed under its action. Such are the distinct markings often occurring in two annual broods of butterflies termed "seasonal dimorphism," the origin of the markings of caterpillars, and the unexpected phenomena of the transformation of the Mexican axolotl; and we are therefore led to conclude that an equally careful and minute study of other cases of difficulty would probably lead to an equally satisfactory explanation. This argument is not, however, conclusive, because the cases here chosen may not be really test cases; and among the countless forms of nature, and especially among the higher animals, there may well be characters or organs the origin of which are due to other and altogether unknown causes. To students of evolution, Dr. Weismann's volume will be both instructive and interesting, but it is a work that requires not merely reading, but study, since its copious facts and elaborate chains of argument are not to be mastered by a hasty perusal. The book is beautifully got up and illustrated by a number of coloured plates admirably executed in chromo-lithography, and it will form a handsome as well as an indispensable addition to every naturalist's library.

ALFRED R. WALLACE

OUR BOOK SHELF

Land and Freshwater Mollusca of India. Edited by Lieut.-Col. H. H. Godwin-Austen, F.R.S., &c. Part I. February, 1882. (London: Taylor and Francis.)

THIS work is announced as "supplementary to Messrs. Theobald and Hanley's 'Conchologia Indica,'" but it is much more than a supplement, and is framed on far more scientific principles. The "Conchologia Indica" was published in 1870; and the editors in their preface say that "after an interval of two or three years it is hoped that materials for a supplement (the malacological portion of which will be edited by Major Godwin-Austen) will be accumulated." The "Conchologia Indica," however,